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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/632,202

07/29/2003

Joseph W. Hoff

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12/15/2004

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EXAMINER

CALEY, MICHAEL H

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 12/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/632,202

Applicant(s)

HOFF ET AL.

Examiner

Michael H. Caley

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>07292003</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 13-16, 18, 19, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Chung et al. (U.S. Patent No. 5,995,184 “Chung”).

Regarding claim 1, Chung discloses a method for manufacturing an optical compensator on a transitional substrate (Figure 4) comprising:

- i) applying a first orientation layer to the transitional substrate (steps 402 and 404);
- ii) aligning the first orientation layer (step 406); and
- iii) applying a first anisotropic liquid crystal material on the first orientation layer (step 408; Column 3 lines 36-41).

Regarding claim 2, Chung discloses the transitional substrate as removed (Figure 4 element 414).

Regarding claim 13, Chung discloses the first orientation layer as applied by coating (Column 4 lines 13-14).

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Regarding claim 14, Chung discloses the first anisotropic liquid crystal layer as applied by coating (Column 3 lines 39-40).

Regarding claim 16, Chung discloses the optical compensator as applied to a liquid crystal display cell (Column 3 lines 36-38).

Regarding claim 18, Chung discloses the orientation layer as oriented through photoalignment using polarized light (Column 7 lines 4-6).

Regarding claim 19, Chung discloses the orientation layer as oriented through rubbing (Column 6 lines 54-59).

Regarding claim 22, Chung discloses the anisotropic liquid crystal material as polymerizable via actinic radiation (Column 7 lines 33-44).

Claims 1, 5, 7, and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Saynor et al. (U.S. Patent No. 6,157,427 "Saynor").

Regarding claim 1, Saynor discloses a method for manufacturing an optical compensator on a transitional substrate (Figure 8) comprising:

- i) applying a first orientation layer (Figure 8 element 14, alternatively element 12) to the transitional substrate (Figure 8 element 10);
- ii) aligning the first orientation layer (Column 4 lines 3-18, alternatively Column 3 lines 58-63) and

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iii) applying a first anisotropic liquid crystal material on the first orientation layer (Figure 8 element 16; Column 4 lines 19-21, alternatively element 26).

Regarding claim 5, Saynor discloses a retardation layer as applied to the transitional substrate prior to application of the first orientation layer (Figure 8 element 26).

Regarding claim 7, Saynor discloses the retardation layer as applied by coating (Column 4 lines 22-24, Column 5 lines 27-31).

Regarding claim 27, Saynor discloses a retardation layer on top of the anisotropic layer (Figure 8 element 16).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 4, 5, 8-12, 15, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chung in view of Umeda et al. (U.S. Patent Application Publication 2003/0067572 "Umeda").

Regarding claims 3 and 4, Chung fails to explicitly disclose a load average stress for the removal of the transitional substrate. Umeda, however, teaches a peeling tension of 9.8 N/m (Page 20 [0328]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a peeling tension as proposed for the substrate removal. One would have been motivated to use such a low peeling tension as taught by Umeda to maintain the uniform optical properties of the compensator. It is well known in the art that excessive stretching or compressive stress to an optical compensator layer can vary the optical properties of the layer.

Regarding claim 5, Chung fails to disclose a retardation layer as applied to the transitional substrate prior to application of the first orientation layer. Umeda, however, teaches a retardation layer (Figure 1, transparent support) to which the first orientation layer (Figure 1 element A-1) is applied having a retardation of less than 10 nm or between 15-150 nm and comprised of TAC (Page 24 [0369-0372]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied a retardation layer to the transitional substrate prior to application of the first orientation layer. One would have been motivated to form the compensator with the proposed retarder as an engineering expediency to achieve a particular viewing angle characteristic to improve particular viewing angle properties within the disclosure of Umeda (Page 24 [0369-0372]).

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Regarding claims 8 and 9, Chung fails to explicitly disclose the thickness of the compensator. Umeda, however, teaches a range for the thickness as from 1 to 1000 microns (Page 13 [0231]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have constructed the compensator to have a thickness less than 30 micrometers. One would have been motivated to form the compensator with the proposed thickness as an engineering expediency to achieve a particular viewing angle characteristic to improve particular viewing angle properties within the disclosure of Umeda (Page 1 [0013-0014]).

Regarding claim 15, Chung fails to disclose a barrier layer applied between the retardation layer and the first orientation layer. Umeda, however, teaches such a layer (Page 25 [0375]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed a barrier layer between the retardation layer and the first orientation layer. One would have been motivated to form such a layer to prepare the retardation layer to be a proper support for the orientation layer (Page 25 [0375]).

Claims 6, 23, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chung in view of Akins (U.S. Patent No. 5,399,390).

Chung fails to disclose the transitional substrate as polyethylene terephthalate or as extruded. Chung, however, teaches the substrate as polymeric. Akins further teaches

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an advantageous substrate for a liquid crystal display application formed of an extruded PET material (Column 3 lines 27-40).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed the substrate as proposed. One would have been motivated to form the substrate as such a polymer to eliminate the need for an extra alignment layer (Chung, Column 8 lines 1-6). Additionally, one would have been motivated to form the substrate as a PET or extruded substrate for an additional birefringent effect of the compensator (Column 5 lines 27-40).

Claims 17, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chung.

Regarding claim 17, Chung fails to disclose the orientation layer as comprising polyvinyl cinnamate. The examiner takes Official notice that polyvinyl cinnamate is a commonly used material for constructing an orientation layer.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used polyvinyl cinnamate as an orientation layer in the compensator disclosed by Chung. One would have been motivated to use such a material for the orientation layer to benefit from the expected results of such a layer, such as a preferred aligning method.

Regarding claims 20 and 21, Chung fails to disclose the anisotropic layer as discotic or calamitic liquid crystal. The examiner takes Official notice that both discotic and calamitic liquid crystals are commonly used materials for a liquid crystal

compensator. Additionally, Chung states that alternative retardation films may be combined in order to achieve a novel compensator structure.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have constructed the anisotropic layer from a calamitic or discotic liquid crystal. One would have been motivated to use such a material for the anisotropic layer to benefit from the expected results of such a layer, such as a preferred viewing angle characteristic.

Claims 25, 26, and 28-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chung in view of Koch et al. (U.S. Patent No. 5,619,352 "Koch") and Saynor.

Regarding claims 25 and 31, Chung fails to disclose the steps of repeating steps i)-iii) to form a plurality of orientation layers and anisotropic layers to form an integral component wherein an optical axis of each anisotropic layer is positioned relative to respective optical axis of the other anisotropic layers by an angle about an axis perpendicular to a plane of each of the substrates. Chung, however, teaches that the disclosed compensator (Figures 1 and 2) may be combined with other retardation films to provide compensator structures in the referenced disclosures (Column 7 lines 47-51, Column 1 lines 35-60). One such disclosure, Koch, teaches various compensator structures in which the "A-plate" and "O-plate" structures may be constructed using the advantageous techniques as disclosed by Chung (Figures 1 and 2 and Column 2 lines 46-57 of Chung; Figure 14, Column 9 Table I of Koch). Additionally, Saynor teaches

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methods in which compensators constructed by transitional substrates are combined (Figures 2-4, 6, 9, and 10; Column 5 lines 43-60).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have constructed the optical compensator to have a plurality of anisotropic layers and orientation layers as proposed. One would have been motivated to combine multiple compensators built on transitional substrates to construct a compensator as disclosed by Koch having improved contrast and grayscale stability over a wide field of view (Column 10 lines 29-59).

Regarding claims 26, and 30-33, Chung fails to explicitly disclose the optical axes of the anisotropic layers as orthogonal and the step of removing the transitional substrates from the compound film. Koch, however, teaches an orthogonal relationship between the optical axes of anisotropic layers (Column 8 line 61 – Column 9 line 5). Saynor teaches removing the substrates from the compound film

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have constructed the layers to have an orthogonal relationship as proposed. Koch teaches the particular compensator as having improved contrast and grayscale stability over a wide field of view (Column 10 lines 29-59). One would have been motivated to construct the compensator accordingly to improve a displayed image of a liquid crystal display over a wide viewing angle.

Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have removed the transitional substrates from the compound film. One would have been motivated to remove the substrates to enable

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reuse of the substrates and to allow the film to be combined with other films, such as when combined in a manner to form a film as taught by Koch (Table I).

Regarding claims 28 and 29, Chung fails to disclose the addition of a plurality of orientation layers and anisotropic layers. Koch, however, compensators constructed of multiple compensator layers (Table I), which would necessitate multiple orientation layers and anisotropic layers using the methods as described by Chung and Saynor.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have constructed the optical compensator to have a plurality of anisotropic layers and orientation layers as proposed. One would have been motivated to combine multiple compensators built on transitional substrates to construct a compensator as disclosed by Koch having improved contrast and grayscale stability over a wide field of view (Column 10 lines 29-59).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael H. Caley whose telephone number is (571) 272-2286. The examiner can normally be reached on M-F 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael H. Caley
December 7, 2004

mhc

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TARIFUR R. CHOWDHURY
PRIMARY EXAMINER